

PENGARUH PENAMBAHAN UREA SLOW RELEASE RADA COMPLETE FEED TERHADAP SINTESIS PROTEIN MIKROBIA SECARA IN VITRO

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Intisari

Penelitian ini bertujuan untuk mengetahui konsentrasi protein mikrobial dan amonia dari fermentasi campuran *complete feed* (CF) dan *urea slow release* (USR) oleh mikrobial rumen secara *in vitro*. Penelitian terdiri dari tiga perlakuan substrat yaitu *complete feed* dengan *urea granule* 1,5% (P1), *complete feed* dan *urea slow release* 1,5% (P2), serta *complete feed* dan *urea slow release* 3% (P3). Fermentasi dilakukan selama 96 jam. Sampel hasil fermentasi diambil pada jam ke 0,5, 1, 1,5, 2, 4, 8, 12, 24, 48, 72, 96 untuk kemudian dilakukan analisis konsentrasi amonia dan konsentrasi protein mikrobial. Data yang diperoleh dianalisis dengan analisis variansi menggunakan rancangan acak lengkap pola searah. Jika terdapat perbedaan nilai rata-rata variabel akibat perlakuan maka dilanjutkan dengan uji *Duncant's New Multiple Range Test* (DMRT). Hasil penelitian menunjukkan bahwa rerata konsentrasi protein mikrobial untuk P1, P2, P3 berturut-turut sebesar 0,1028, 0,0986, 0,1093 mg/ml cairan fermentasi dengan perbedaan yang nyata ($P < 0,05$). Rata-rata konsentrasi amonia untuk P1, P2, dan P3 berturut-turut adalah 14,598, 8,887, 8,595 mg/100 ml cairan fermentasi. Konsentrasi amonia tertinggi pada P1 dicapai pada jam ke-4 sebesar 23,587 mg/100 ml cairan fermentasi dengan besarnya protein mikrobial 0,0534 mg/ml cairan fermentasi. Pada P2 dan P3 konsentrasi amonia tertinggi baru dicapai pada jam ke-72 sebesar 17,916 dan 21,411 mg/100 ml cairan fermentasi. Besarnya konsentrasi protein mikrobial P2 dan P3 pada jam ke-72 masing-masing adalah 0,1049 dan 0,1308 mg/ml cairan fermentasi. Dari hasil penelitian dapat diambil kesimpulan bahwa pemberian *urea slow release* dalam *complete feed* lebih efektif untuk sintesis protein mikrobial dibandingkan dengan penambahan urea granul.

Kata kunci : *Urea slow release*, Konsentrasi amonia, Protein mikrobial, Fermentasi *in vitro*

EFFECT OF UREA SLOW RELEASE IN COMPLETE FEED ADDITION ON IN VITRO MICROBIAL PROTEIN SYNTHESIS

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Abstract

The objective of this study was to know the concentration of microbial protein and ammonia on in vitro fermented mixture of complete feed and urea slowly released by rumen microbes. Three different substrates were used in this experiment, namely complete feed and urea granule 1,5% (P1), complete feed and urea slowly released 1,5% (P2), as well as complete feed and urea slowly released 3% (P3). The fermentation was done in 96 hours. Samples of the fermentation mixture were taken every 30 minutes for 2 hours starting from the first 30 minutes, then continued at 4th, 8th, 12th, 24th, 48th, 72nd, 96th hours. The samples were analyzed for concentration of ammonia and microbial protein. The data obtained were analyzed using one way Completely Randomized Design (CRD) classification. The differences between mean values were analyzed by Duncant's New Multiple Range Test (DMRT). The result of this research showed that the concentration of microbial protein of P1, P2, and P3 were 0,1028, 0,0986, 0,1093 mg/ml of fermentation mixture respectively with significant differences ($P < 0,05$). The mean of ammonia concentration for P1, P2, P3 were 14,598, 8,887, 8,595 mg/100 ml of fermentation mixture respectively. The highest ammonia concentration of P1 reached at 4th hour with the value of 23,587 mg/100 ml of fermentation mixture, with the microbial protein concentration were 0,0534 mg/ml of fermentation mixture. P2 and P3, the highest ammonia concentration reached at 72nd with the value of 17,916 and 21,411 mg/100 ml of fermentation mixture with microbial protein concentration were 0,1049 and 0,1308 mg/ml of fermentation mixture. The conclusion of this research showed that urea slowly released addition to complete feed was more effective for microbial protein synthesis than urea granule addition.

Keywords : Urea slow release, Ammonia concentration, Microbial protein,
In vitro fermentation.